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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,792	05/09/2006	Marc Husemann	101769-315	4883
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Briscoe, Kurt G. Norris McLaughlin & Marcus, PA 875 Third Avenue, 8th Floor New York, NY 10022			EXAMINER REDDY, KARUNA P	
			ART UNIT	PAPER NUMBER
			1796	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary**Application No.**

10/539,792

Applicant(s)

HUSEMANN ET AL.

Examiner

KARUNA P. REDDY

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 9-12, 14-17, 19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 9-12, 14-17 and 19-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB06)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. The Appeal Brief filed 7/14/29010 has been reviewed. While applicant's arguments are not persuasive to withdraw the rejections of record for reasons explained below, it was noticed that one of the documents used in the rejection of claims 3 and 12, namely Knovel, is not found in the record. Indeed, the applicant alludes indirectly to that on page 19 of the Appeal Brief by remarking that "the Examiner does not anywhere explain her reliance on Knovel ... ". However, note that paragraph 5 of the rejection mailed 14 October 2009 explicitly states that "the density of inorganic silicates varies over a wide range from 2.0 to 6.5". That statement is based on evidence provided by Knovel. Clearly, the cited rejection involving Knovel is complete but an inadvertent omission to supply Knovel necessitates setting forth the rejections already of record with an indication that a copy of Knovel is now provided to complete the evidence of record. The present action is therefore being made final. The delay in prosecution is regretted.
2. Claims 1-6, 9-12, 14-17 and 19-20 are currently pending in the application.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

4. Claims 1-2, 4-6, 9-11, 14-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al (5,910,522) in view of Prucker et al (Macromolecules 1998, 31, 602-613).

Schmidt et al disclose an adhesive comprising a transparent polymer and/or polymerizable oligomer and/or polymerizable monomer suitable for use as an adhesive, nanoscale inorganic particles and optionally compounds for surface modification of said inorganic particles (column 8, claim 1). Polymers that can be preferably employed as transparent polymers include polyacrylates and polymethacrylate. Instead of the mentioned polymers, oligomers and/or precursors (monomers) thereof may be employed as well (column 3, lines 39-61). The listing of nanoscale inorganic particles includes silicates and SiO_2 (column 4, line 6-10) which has a particle size preferably from 2 to 50 nm and particularly 5 to 20 nm (column 4, lines 36-37). Suitable surface modifier, i.e. surface modifying low molecular weight compounds have at least one functional group capable of reacting with groups present on the surface of powdered particles. Thus, an acid/base reaction may take place between the functional groups of surface modifying compound and surface groups of particles (column 5, lines 29-48). Examples of surface modifier compounds include mono and polycarboxylic acids having 1 to 12 carbon atoms such as acrylic acid and methacrylic acid as well as their esters e.g. methyl methacrylate (column 5, lines 55-63).

The nanoscale particles may be dispersed in one of the solvents and one of the polymerizable compounds (col. 6, lines 34-37). The polymer and polymerizable compounds may be dissolved in or mixed into a stable dispersion of the nanoscale particles, optionally with addition of the surface modifying substances (column 6, lines 44-48). If polymerizable compounds are used, the adhesive also contains thermal or photochemical crosslinking initiators (column 6, lines 49-54). If the adhesive contains a crosslinkable compound, said compound is crosslinked and cured thermally and/or by irradiation depending on the type of crosslinking initiator employed (column 7, lines 19-

24). Examples of thermal initiators include azobisisobutyronitrile, dibenzoyl peroxide and t-butylperbenzoate (column 7, lines 1-6). Examples of photoinitiators include 1-hydroxycyclohexylphenyl ketone and others (col. 6, lines 55-67) which reads on double bond functionalized photoinitiator of instant claims. Curing conditions (UV wavelength) depend on the decomposition conditions of crosslinking initiator (col. 7, lines 25-27). It is noted that UV wavelength encompasses UV irradiation in the range of from 200 to 400 nm of instant claims.

A working example of the preparation of adhesive includes mixing methyl methacrylate, SiO₂ and styrene (column 7, lines 53-56). The density of methyl methacrylate and styrene is 0.933 g/cm³ and 0.907 g/cm³ respectively (Knovel critical tables - Publication 2003). Therefore, ratio of methyl methacrylate and styrene in working example will read on the weight percentages used in claim 4. The finished adhesive is applied onto a substrate or said substrate is dipped into said adhesive (column 7, lines 13-14).

Schmidt et al is silent with respect to coating of filler (i.e. silicate and/or silica gel) with polyacrylate that is chemically bonded to a free-radical initiator which free radical initiator is chemically bonded to silicate and/or silica gel.

However, Prucker et al teach that grafting of polymer on solid surface by reaction of functional group of the preformed polymer with a corresponding site on the surface of substrate is hampered by intrinsic limitation of the graft density and accordingly layer thickness due to strong kinetic hindrance for the attachment of polymer molecules once the surface is significantly covered. Several studies are done wherein the initiators are attached to the surface of solid substrates (page 602, col. 1, lines 1-21). See figure 1 of Prucker et al, wherein reaction scheme shows covalently attached polymer monolayers

on silica surfaces using immobilized AIBN-type azo initiators. Therefore, in light of the teachings in Prucker et al, it would have been obvious to one skilled in art at the time invention was made to attach the azo initiator, of Schmidt et al, to surface of solid materials, such as the nanoparticulate silicates and SiO_2 of Schmidt et al, and polymerize the monomers of Schmidt et al (i.e. acrylic acid and methacrylic acid), because Schmidt et al contemplates surface modification of nanoparticles with polymers and Prucker et al has shown that graft density and accordingly layer thickness of polymer on the solid surface can be controlled by attaching initiator to the solid surface and then polymerizing monomer on the said surface, and one of ordinary skill in art would expect such a modification to work for the nanoparticle of Schmidt et al, motivated by expectation of success.

5. Claims 3 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schmidt et al (5,910,522) in view of Prucker et al (Macromolecules 1998, 31, 602-613), as evidenced by Knovel (Knovel critical tables - Publication 2003).

The discussion with respect to Schmidt et al and Prucker in paragraph 4 above is incorporated herein by reference.

Schmidt et al is silent with respect to weight fraction of polyacrylate coated particles of silicate and/or silica gel.

However, the proportion of nanoscale particles in adhesive composition of Schmidt et al is from 1 to 50 % by volume (column 4, lines 55-56) and weight fraction of instant claim is from 0.5 to 25. The density of inorganic silicates varies over a wide range from 2.0 to 6.5 (Knovel). Therefore, in light of the evidence provided by Knovel, it would have been obvious to one skilled in art at the time invention was made to

recognize that volume percentages of inorganic silicates in Schmidt et al encompasses weight fraction of present claims.

Response to Arguments

6. Applicant's arguments filed 7/14/2010 have been fully considered but they are not persuasive. Specifically, applicant argues that (A) pre-amble constitutes a limitation and specifies that the adhesive is "pressure sensitive" and "transparent". Clearly, transparency and pressure-sensitivity are structural characteristics that must be found in Schmidt for a prima facie case of obviousness. Examiner has not dealt with the pressure-sensitive adhesive claim limitation; (B) Schmidt teaches optional surface modification of nanoscale particles for the purpose of avoiding agglomeration of the particles. These are generally small molecules and there is no teaching or suggestion that the nanoscale particles be surface modified with polymers; (C) there is no mention, in Schmidt, of surface modifiers of the free-radical initiator that are bonded between the polyacrylate coating and the silicate; (D) persons skilled in the art must make a number of selections within Schmidt's disclosure to arrive at the instant claims - polyacrylates from a large number of polymers, silicate or silica gel as the filler, small size of the filler, modifying the surface of nanoparticles with initiators and thermally cure to yield a polyacrylate chemically bonded to silicate.

With respect to (A), applicant's attention is drawn to Schmidt et al, wherein it states - polymers particularly preferred are transparent polymers such as polyacrylates and polymethacrylates (col. 3, lines 58-60). Hence, it is clear that Schmidt et al uses transparent polymers in the preparation of its adhesives and meets the instant limitation

that the adhesive be transparent. In addition, given that compositional requirements of instant claims are met by the teachings in Schmidt et al in view of Prucker et al, it is the examiner's position that, use as pressure sensitive adhesive is an intended use of the composition of Schmidt et al in view of Prucker et al.

With respect to (B), applicant's attention is drawn to rejection set forth in paragraph 4 above, wherein in states - The nanoscale particles may be dispersed in one of the solvents and one of the polymerizable compounds (col. 6, lines 34-37). The polymer and polymerizable compounds may be dissolved in or mixed into a stable dispersion of the nanoscale particles, optionally with addition of the surface modifying substances (column 6, lines 44-48). If polymerizable compounds are used, the adhesive also contains thermal or photochemical crosslinking initiators (column 6, lines 49-54). If the adhesive contains a crosslinkable compound, said compound is crosslinked and cured thermally and/or by irradiation depending on the type of crosslinking initiator employed (column 7, lines 19-24). Hence, it is the examiner's position that when polymerizable compounds such as acrylic acid and methacrylic acid as well as their esters e.g. methyl methacrylate are used as surface modifying compounds, polymerization of these monomers (i.e. small molecules), on the surface of nanoscale particles, is implicit in the teachings of Schmidt.

With respect to (C), Graham v. Deere analysis was done and the reference of Prucker was brought in to teach that graft density and accordingly layer thickness of polymer on the solid surface can be controlled by attaching initiator to the solid surface and then polymerizing monomer on the said surface.

With respect to (D), applicant's attention is drawn to Schmidt et al wherein it states - polymers particularly preferred are transparent polymers such as polyacrylates

and PMMA (col. 3, lines 58-60); SiO₂ particles show additional advantage of a thixotropic effect when being dispersed in a polymer matrix (col. 4, lines 38-44); and nanoparticles preferably have a size of 2 to 50 nm and particularly 5 to 20 nm (col. 4, lines 36-38). In addition, Prucker provides the motivation to modify the surface of nanoparticles with initiators and polymerize a monomer to yield a polyacrylate chemically bonded to silicate via the initiator.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARUNA P. REDDY whose telephone number is (571)272-6566. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/K. P. R./
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796